

# STEMM Equity and Excellence 2050


*A National Strategy for Progress and Prosperity*

## Executive Summary



## Foreword



 In our best days, we envision a world where science, technology, engineering, mathematics, and medicine help to heal the sick, feed the hungry, protect the planet, and improve the lives of all. This vision is not just a distant dream but a tangible reality that will be made manifest by a steadfast commitment to scientific excellence and fostering the diversity of thought, background, and identity that is essential to that excellence.

Imagine a world where every child, regardless of background, has the opportunity to discover the wonders of STEM early in their lives, senses the encouragement of those around them to pursue their interests, and feels the support of the enterprise in achieving the success made possible by their hard work and talent. Skilled and diverse educators inspire a new generation, breaking down barriers and nurturing talents that might have gone unnoticed in the past. Picture a landscape where higher education becomes a powerful enabler, providing resources and opportunities for everyone.

As we look toward the horizon, innovation is the source of health and prosperity for our society. Diverse minds, representing varied experiences and perspectives, fuel groundbreaking research and development. Historic gaps in opportunities and investment are bridged, unlocking the full

potential of the brainpower within our nation. At the core of this vision are the foundations of accountability and partnership, ensuring that progress is not just measured but felt across all our communities.

In this future we see thriving workplaces that reflect the rich tapestry of our nation and where everybody, regardless of background, finds the support and feels the belonging that fosters their contributions to STEM innovation. If we are going to cure disease, feed the world, grow the economy, and explore our universe, we need the talents of the descendants of Native Americans, pilgrims, founding mothers and fathers, enslaved people, and immigrants from everywhere.

This future is not a far-off fantasy – it's within our grasp. The National Strategy presented here is a roadmap to this future. We look forward to traveling with you.

A handwritten signature in black ink, appearing to read 'SP' followed by a long horizontal stroke.

**Sudip Parikh, Ph.D.**

Chief Executive Officer, AAAS  
Executive Publisher, *Science* Family of Journals

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The 21st century has seen rapid and consequential advancements in science and technology that have led to innovative solutions to some of society's most pressing problems. Due to scientific breakthroughs in medicine, heart disease is no longer a death sentence, advancements in cancer research have propelled us closer to cures than ever before and a new class of vaccines improves our ability to fight infection.

Today, rapid advancements in artificial intelligence (AI) stir our imagination and offer a world of possibilities, from massive productivity gains and economic growth to the potential for generating new solutions to our most pressing issues, including climate and health. Whereas AI offers a myriad of positive possibilities, it also poses significant risks to people's employment security and economic well-being as well as potentially harming the civil liberties of various communities as a result of bias. While scientific progress and technological advancements carry many benefits, there is also great risk – including to civil and human rights – if they are not advanced with, by, and for all people.

The U.S. is uniquely poised to lead this movement toward inclusive excellence in science, technology, engineering, mathematics and medicine (STEMM), which is ultimately the only way to maintain and propel the U.S. as a global leader in these fields, as we have been in the past. The U.S. has leveraged this leadership to strengthen our national security, overcome diseases and power a robust economy. The future demands continued excellence in these areas – even as the opportunities and challenges that face our nation and the world remain daunting.

STEMM is needed for everyone, everywhere. To meet the challenges that lie ahead, the U.S. must greatly

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expand our talent pool while also unleashing the brilliance and creativity of groups historically excluded from STEM education and the workforce. To do this, the U.S. must achieve parity in our workforce by ensuring all people are treated equitably in terms of access to opportunities, education, salary, status and representation.

Ensuring the U.S. improves achievement and achieves greater equity in STEM is not just the right thing to do but also paramount for our ability to meet today's challenges and for the U.S. to continue to lead into the future. Inequity in STEM undercuts the flow of diverse ideas and perspectives, dims our collective knowledge base and quality of innovation, and blunts the STEM community's ability to fully serve society. Given the intricacies and uniqueness of different communities, tailored solutions will be necessary to effect real change. As such, teams must be built that are reflective of myriad cultures, identities and demographics to meet these unique needs. STEM fields that cannot reach their greatest potential threaten U.S. leadership on the global stage.

While important progress to broaden STEM participation has been made, the effects have been uneven across groups, fields and sectors. Accelerating progress is critical, especially as policies and legal challenges continue to

complicate the path to progress. If we are to achieve parity, everyone must be at the table across every state and territory, including all levels of government, industry, the workforce, higher education, pre-K-12, philanthropies, R&D enterprises, community organizations and more.

In December 2022, the American Association for the Advancement of Science (AAAS), in collaboration with the Doris Duke Foundation (DDF) and the White House Office of Science and Technology Policy (OSTP), launched the STEM Opportunity Alliance (SOA) at the first-ever White House Summit on STEM Equity and Excellence. SOA is designed to bring together cross-sector partners in a strategic effort to achieve equity and excellence in STEM and to garner commitments to shared goals and metrics for accountability and progress.

This document outlines a broad national strategy for building a STEM workforce that expands opportunities and reflects the diversity of our nation by 2050 as well as key progress metrics and intended goals. This co-constructed national strategy was crafted to leverage our country's talent reservoir. The bold goal is to add 20 million new diverse STEM professionals to the U.S. workforce across all jobs and sectors by 2050. This vision requires decades of concerted, coordinated action beginning now.

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## Foundations for Progress:

Achieving long-term systems change will require not just doing the work but also grounding that work in the following foundations:



**Accountability:** Developing and implementing robust measures to track progress and align action.



**Partnership:** Fostering partnerships among public and private institutions and across sectors to improve education and career pathways and break down systemic barriers.

## Key Strategy Pillars:

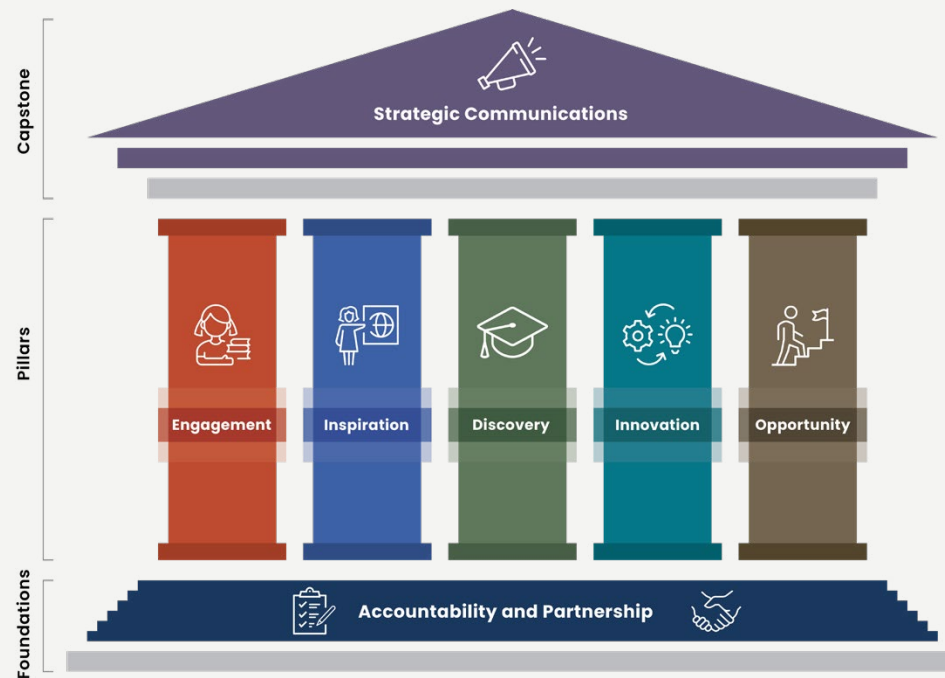


**I. Engagement: Nurturing Curiosity in Every Child.** Engagement with STEMM early and throughout childhood is essential to nurturing and harnessing curiosity and exploration and opening pathways to future opportunities.



**II. Inspiration: Developing Skilled and Diverse Educators.** The future of U.S. progress in STEMM is dependent on the quality and availability of diverse and skilled educators in both in- and out-of-school learning environments to meet demand.

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**III. Discovery: Creating Opportunity for All in Higher Education.** Closing the opportunity gap in higher education is essential to ensuring that all individuals, including those from historically excluded and marginalized groups, receive appropriate access to postsecondary resources and opportunities for advancement.



**IV. Innovation: Leveraging Diverse Minds in R&D.** Diversity is a catalyst for innovation. Gaps exist in funding and opportunities for researchers from historically excluded communities, and our ability to fully tap into the unique brainpower hosted within the U.S. is stifled.



**V. Opportunity: Ensuring All Workers Thrive.** Employers, as well as education and training institutions, must provide workers with sufficient support in an inclusive environment that enables equitable opportunities to participate in and contribute to STEM innovation.

## Capstone:

A strong shared focus on strategic communications, storytelling and public awareness will be critical to driving success across all five pillars.



**Strategic Communications:** Shaping broad mindsets about who belongs in STEM fields by highlighting the voices and stories of diverse STEM professionals and STEM contributions to society.

## Structures for Implementation:

To drive implementation, SOA will work with its partners to create:



**New and Renewed Commitments:** Broaden and deepen the movement for change by bringing more partners to the table and collectively making new commitments aligned to the strategy.



**A Coordinated Infrastructure:** Strengthen the infrastructure for coordination and action by launching working groups led by anchor partners to drive efforts in discrete workstreams.



**Public-Private Partnerships:** Coordinate and align with government efforts to create an environment that enables and supports change.

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As the world continues to grapple with new and unique challenges, it is essential that innovative solutions emerge. Innovation is rooted in the promotion and engagement of a wide range of ideas generated through people's creativity and informed by the diversity of their lived experiences and backgrounds. America has a wealth of diversity and talent to bring to bear.

To propel STEM and rise to the challenges of tomorrow, it is imperative that committed actors collaborate across the public and private sectors to foster a new era of equity and inclusion in the American STEM ecosystem. Who leads the scientific and technological advances of today will determine who leads the world tomorrow.

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### The STEMM Opportunity Alliance (SOA)

#### About SOA

The STEMM (Science, Technology, Engineering, Mathematics, & Medicine) Opportunity Alliance is a national effort by the American Association for the Advancement of Science (AAAS), with the support of the Doris Duke Foundation (DDF), that will galvanize stakeholders to achieve STEMM equity and excellence by 2050. Launched in December 2022 at the inaugural White House Summit on STEMM Equity and Excellence, SOA brings together organizations and entities from across sectors and scientific communities that are committed to developing and advancing a national strategy for achieving shared goals for equity in STEMM. To view SOA's growing list of partners committed to achieving STEMM equity and excellence, please visit <https://stemmopportunity.org/partners>.

#### Vision

Build a STEMM ecosystem rooted in equity, inclusion and scientific excellence to power progress, innovation and prosperity for all by 2050.

#### Mission

SOA will address key areas to attain fundamental, systemic change and ensure the diversity that is necessary for the increased performance and innovative ideas that are needed to keep the U.S. competitive.

#### Strategy

SOA will enable public and private institutions to work across silos to make substantive changes that can improve outcomes in STEMM for millions of Americans from historically excluded and marginalized groups. SOA will:

- **Elevate STEMM equity as a national priority** through the creation and implementation of this national strategy.
- **Support partner commitments** aligned with SOA's goals and critical to achieving STEMM equity and excellence.
- **Create and convene working groups** across key issue areas to organize and deepen relationships among a wide range of partners from the public, private and government sectors.
- **Host targeted events** where public, private and government leaders can discuss key challenges and opportunities for moving the needle on STEMM equity.

**Hold the STEMM ecosystem accountable** by developing progress accountability metrics to track progress against shared goals.



To keep in touch, visit the SOA site at [www.stemmopportunity.org](http://www.stemmopportunity.org). On the website, there are opportunities to commit to becoming a partner, subscribe to the newsletter, connect on social media and more.



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### The Focus of This Strategy: STEMM Equity and Excellence

SOA is composed of organizations from across the scientific, technological, engineering, mathematical and medical fields. Our partners include universities, nonprofit organizations, philanthropies, professional societies, government entities and private companies representing sectors from entertainment to finance and more.

The inclusion of medicine, the second “M” in STEMM, is particularly relevant in these efforts given the long history of inequities in the field. For example, the health disparities experienced by historically excluded and marginalized communities during the COVID-19 pandemic are the result of centuries of mistrust and misrepresentation within the medical field as well as the failure of health systems and critical technologies. Historically excluded and marginalized communities have been inordinately dehumanized and exploited in the name of the scientific enterprise. Given this history, SOA is committed to the full and deliberate inclusion of medicine, and the health sciences more broadly, to create a more just society and a more excellent and equitable STEMM ecosystem.

STEMM equity is realized in two directions: by removing barriers and by increasing opportunities. People can be marginalized by any number of differences, such as race, ethnicity, gender,

ability status, income, geography, religion, sexual orientation, and more. Research has demonstrated the impact of a lack of inclusion by persons with these various identities in the quality of the science and technology produced; whether intentionally or not, marginalization and exclusion from the scientific enterprise pose a major threat to research excellence, health and competitiveness. For SOA, equity simply means addressing these root causes of injustice while providing the necessary support to allow everyone to fully participate in the STEMM enterprise.